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# Performance Record Citrus Trees

## What Constitutes a Performance Record Tree?

### IN THE ORCHARD:

A systematic record of the amount  
of fruit produced by each individual  
parent tree —

### IN THE NURSERY:

A systematic record proving the  
parentage of each individual tree  
in nursery rows ;

The selection of fruit buds from  
superior producing trees by res-  
ponsible men who have an intimate  
knowledge of each parent tree.

## Nusbickel-Warren Nurseries

San Dimas, California

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Telephones: San Dimas 1578  
1573  
1512



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# ***The* CITRUS TREE PROBLEM *in* PROFIT AND LOSS**

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## **QUALITY AND PRODUCTION**

Growers of citrus fruits have awakened to the great difference in production between individual trees in their groves. They find a tree bearing one box of indifferent quality fruit by the side of a tree bearing ten boxes of high quality fruit; both trees having the same care. Records show that the low producing tree usually bears inferior while the highly productive one always yields high quality fruit. The chief concern of the planter is to obtain uniformly highly productive trees.

## **IMPROVEMENT IN SEED AND BUD PROPAGATED PLANTS**

Close observation and investigation as between productive and non-productive orchard trees shows that they differ greatly in character of wood, growth, length of growth, framework, leaves, spacing of leaves, and fruit. In fact, several different types of the same varieties are clearly defined. It is now recognized by all authorities on plant life that throughout the plant kingdom any variety of plants is composed of many types. Some of these are superior types while many are inferior. They do not look alike and they do not produce offspring alike. Certain of these have the ability to reproduce their superiority and thereby produce a race of individuals above the average.

This principle of selection from individuals of superior merit was formerly confined to the breeding of cattle and annual plants. The millions of dollars added to the cattle, dairy, corn, cotton, and sugar industries are substantial proofs that the breeding paid. In comparison with annual crops, tree selection is more important, inasmuch as the type of a tree does not change in its lifetime of twenty-five to fifty years.

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The older groves are closely related to the original parent trees and therefore show less variation than the younger groves removed many generations. It is essential that we now be more careful in the selection of our propagating wood to overcome our remoteness from the original parents and the great number of variations developed since then.

We owe much to the pioneers in this field, Mr. A. D. Shamel, Mr. Scott, and Mr. Englehart. They soon established the fact that a bud propagated from an unproductive branch gave a correspondingly unproductive progeny. And, what is of great value to us, that buds taken from a highly productive limb resulted in progeny corresponding in production. Establishing this fact was the first great stride toward establishing orchards of uniformly productive trees and proving that breeding can be successfully applied to citrus trees in their propagation for improvement.

## OUR RECORDS OF FRUIT PRODUCTION ON PARENT GROVES

In 1913 we started to record the fruit taken from each individual tree at each picking in five of the best groves in the San Dimas and Glendora districts. We will take Mr. Englehart's lemon grove as an example. In the Spring of 1913, we weighed the fruit from each tree at each picking until 1917, after which time we continued the records on the progeny of the best producing trees of the original grove. This second generation grove, the progeny of the best producing trees of the original grove, is now eight years old. We have a record of the fruit production of each tree in this second generation grove. In selecting budwood we use fruiting budwood from only the best producing of these trees and the resulting nursery stock which we give you from our nurseries is really the third generation.

Soon after starting our records we realized that if all the trees in the original grove were as good as the best, that this successful grove could be still more remunerative. Our next care was given to just how to propagate these productive trees so that the progeny would be productive as well.

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Experience soon proved that a bud from a coarse growth produced a rank growth with coarse fruit, while a bud from fruit wood of a good producing tree produced a fine hard fruiting wood, which, from the very first, started to make fruiting branches and develop fine specimens of high quality fruit. After many years experience in this propagation of fruit wood we believe that it is just as essential to choose the right type of wood on a productive tree as to select the productive tree. In other words an inferior tree can be propagated from a tree of high production. Realizing this, all the budwood in our nurseries is selected by Mr. Nusbickel or Mr. Warren, with the exception of some buds selected by certain growers and grown under contract for them. The results have been very gratifying. There are hundreds of acres of our trees now in bearing in California and Texas. In the few cases where circumstances have made it necessary to sell a grove, these groves have sold at an increased valuation, due to the uniformity of the growth and good bearing qualities of the trees.

## **SUMMER FRUIT**

We had not gone very far with our lemon records before we discovered that certain individual trees had a tendency to bear a higher percentage of their fruits in the summer months, while others were constant winter bearers. Having our records before us, the selection of the trees having a decided tendency to bear summer fruit, which brings the highest price, was a simple procedure.

## **PRUNING ECONOMY BY OUR BUD SELECTION**

On a forty-three-acre tract of trees from our nursery twenty acres of which are lemons, seventeen acres valencia, and six acres grapefruit, the total pruning expense for the first five years, or until the freeze of 1922, was \$350, or an average of \$1.63 per acre per year. This was due to the fruiting frame work developed in a natural growth. The only pruning done was to eliminate some of the stronger growths and leave the fruit-

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ing wood alone. Our trees saved many times their cost in pruning expense alone. The lower portion of this grove was severely hurt in the freeze of 1922. In many of the trees two-thirds of the tree had to be cut away. In spite of the fact that the balance between top and roots was thrown out of proportion, and we expected to get a strong growth of sucker-like canes, imagine our delight when the new growth developed into a fruiting framework much the same as the original tree, and today our records show that these trees have borne exceptionally fine crops. This, to our observation, is the severest test that our selected buds have ever been subjected to. The small pruning expense in bringing these frosted trees back to normal bearing due to their inherent fruiting qualities, **again** more than saved many times the entire original cost of the trees, in comparison with other nursery stock.

## THE ESSENTIALS OF GOOD NURSERY TREES

1. Good, healthy, thrifty sour orange roots. Our sour orange seed comes direct from Florida. We grow it under the best cultural conditions and when it is transplanted to nursery rows, only the strongest and most vigorous of the plants are used. We usually discard and burn about one-third of the plants, which insures you a healthy stock and root system.

2. Proper selection of buds. We first segregate the highest producing parent trees. By this we mean that we find the best 150 trees out of 4,000 high producing trees. From these best trees we select only the fine fruiting wood, mostly the small fruit buds back of fancy fruits. The responsibility for this selection is fixed. Mr. Nusbickel or Mr. Warren select this fruiting budwood—it is never delegated. This fine-grained fruit wood, when it comes into bearing, not only produces a great quantity of high quality fruit, but also fruit which has better keeping qualities.

When we get our budwood we keep the buds from each tree separate and segregate it in the nursery row, keeping it distinct by labels in the field and with careful records in the office. Each



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year has witnessed a decided improvement in methods and we now feel that we have accurate data. We especially emphasize the time value of these records. No one can buy records. They can be obtained only by the careful work of several successive years.

3. Root development. The soil in which nursery stock is grown determines the root development of the tree. Trees grown in light sandy soil, such as we have, show an excellent development of root laterals and fine fibrous roots. In transplanting trees balled from this light soil will absorb the irrigating water, insuring a quick growth. On the other hand, a heavy soil produces a heavy taproot, with almost no laterals and fibrous roots. If such a tree is balled and transplanted, particularly into lighter soil, the irrigating water will follow the line of least resistance, refusing to penetrate the heavy ball. Consequently the tree remains dormant, or makes an unsatisfactory growth being the more subject to gum diseases and root troubles. The root development, such as is attained in our light sandy soil, is one of the chief requisites of good nursery stock.

### ***A Note of Warning***

***to prospective buyers of citrus trees  
in the open market***

We wish to add a note of warning to prospective planters. Occasionally a man is found who thinks all that is necessary for a good productive grove, is to purchase the right kind of trees. That is not so. Trees after being planted in good holes need water, cultivation and other requirements at the proper time, and at regular intervals. A case in point where a grove was planted partly to improved trees and partly to ordinary nursery stock. The owner now finds that the ordinary trees require about two-thirds more pruning than the improved. Nevertheless it is essential that the improved trees have intelligent pruning. Do not allow a pruner to come into your grove and sacrifice the slow-growing fruit wood.

**Nusbickel-Warren Nurseries**  
*San Dimas, California*

## WHICH CLASS?

*If you are planting trees, which class do you wish to own when they are six to ten years of age?*

The trees that bear at an early age, thereby reducing their cost, or

The trees that are slow to bear and then have to be rebudded with a loss of four years?

The trees that utilize their energy in producing fruit wood with less "suckers," or

The trees that waste their energy in producing long stretches of wood that bear a small quantity of inferior fruit, and require constant pruning?

The trees that will respond to fertilizer, water, and proper attention by giving a good quantity of high quality fruit, or

The trees that do not respond to the best of care because not of the right type to produce high quality fruit?

The trees that produce a good income, or

The trees that do not pay for their water and care?



## PROFIT *or* LOSS?

**W**ITH increased acreage coming into bearing *common* trees may produce at a loss, when trees of high productivity will show a handsome profit. The difference between the cost of production and the selling price, is your profit or loss. The best type of tree produces the greatest quantity of highquality fruit at the least cost.



*Are you planting with a fair chance of profit, or are you planting with a prospect of a loss?*

As it is just as important to inspect the parent trees as the nursery stock, we invite your inspection of our parent trees, nursery stock, and groves propagated by us and now coming into bearing.





# Citrus Trees

SPRING DELIVERY

Eureka Lemon Trees  
Washington Navels  
Valencia Lates  
and Marsh Seedless  
Grapefruit.

## CAUSE AND EFFECT

### THE PROBLEM:

Elimination of Unprofitable  
Trees and the Selection of  
Productive Trees;

### THE FACTOR:

The Best Type of Tree bears  
the Highest Quality of Fruit  
—also the Greatest Quantity  
of Fruit;

### THE RESULT:

Quantity and High Quality  
mean PROFIT to the grower;

### THE PLACE:

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